J. S. THOMPSON.
TYPE CASTING MACHINE.
APPLICATION FILED APR. 15, 1912.

1,133,198.

Patented Mar. 23, 1915.
3 SHEETS-SHEET 1.

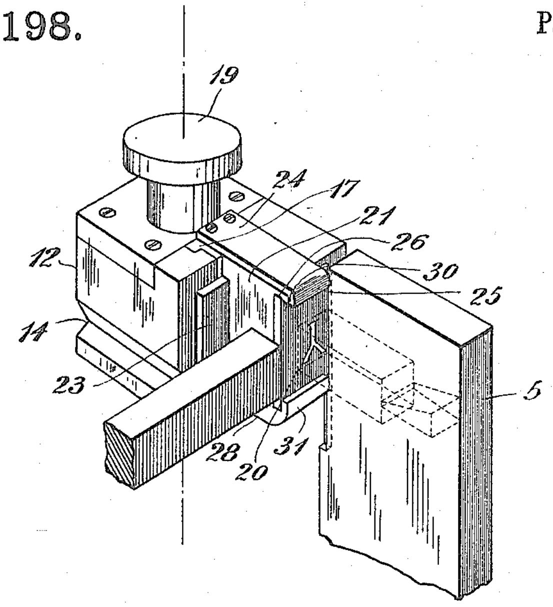

Fig. 2

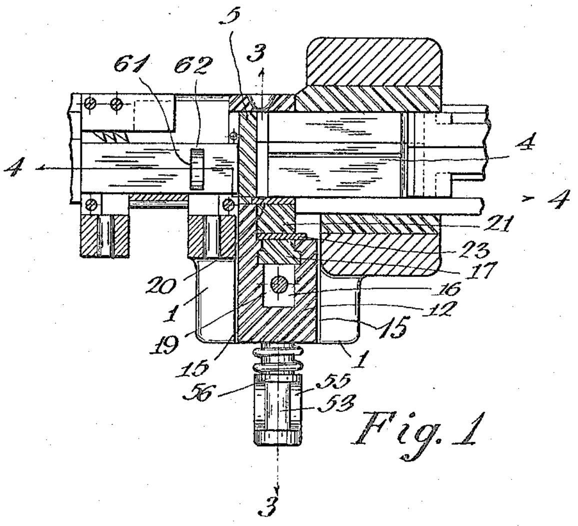

Fig. 1

WITNESSES:

Blanche Chalmers.

Ole M Olsen

INVENTOR

John S. Thompson

BY

Burton U. Hills

ATTORNEY

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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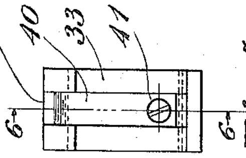

Fig. 5

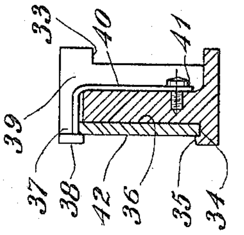

Fig. 6

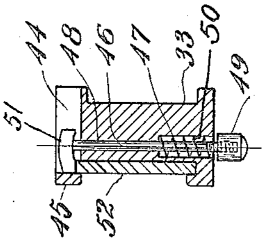

Fig. 8

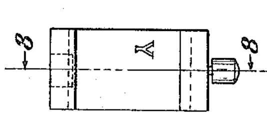

Fig. 7

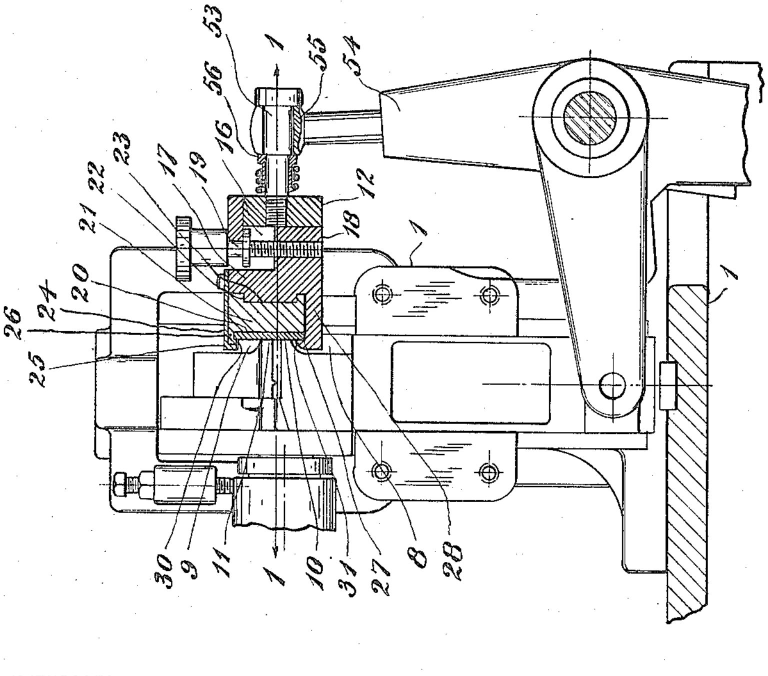

Fig. 3

WITNESSES:

Blanche Chalmers.

Ole M Olsen

INVENTOR

John S. Thompson

BY

Burton U. Hills

ATTORNEY

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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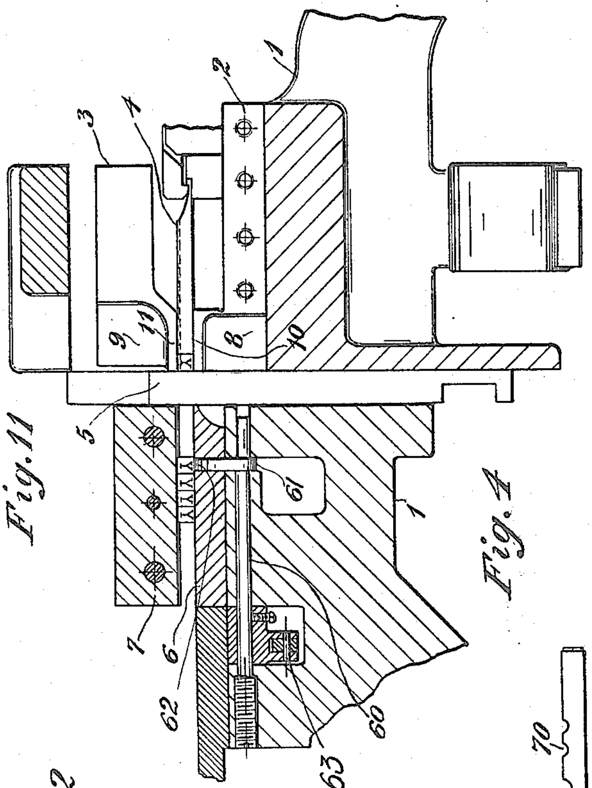

Fig. 4

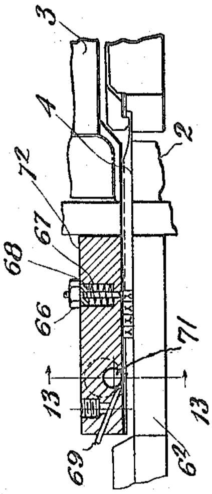

Fig. 11

Fig. 14

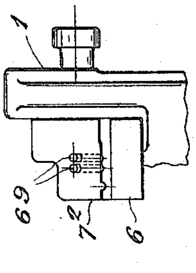

Fig. 12

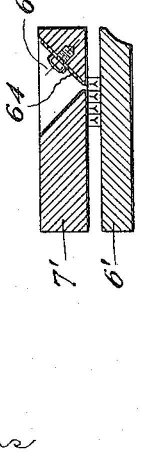

Fig. 10

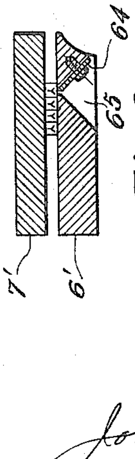

Fig. 9

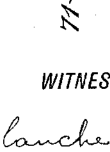

Fig. 13

WITNESSES:

Blanche Chalmers

Ole M Olsen

INVENTOR

John S Thompson

BY

Burton U. Hills

ATTORNEY

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN S. THOMPSON, OF CHICAGO, ILLINOIS.

TYPE-CASTING MACHINE.

1,133,198. Specification of Letters Patent. Patented Mar. 23, 1915.

Application filed April 15, 1912. Serial No. 690,879.

To all whom it may concern:

Be it known that I, JOHN S. THOMPSON, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Type-Casting Machines, of which the following is a description.

My invention relates to means for producing the various forms of type used in the art of printing and is adapted to form a part of, and coöperate with, the mechanism shown and described in an application for United States Letters Patent, filed by me Dec. 5, 1907, Serial No. 405,230, describing the construction and operation of a complete machine for casting type. The present application relates particularly to a matrix carrier and other mechanism adapted to coöperate with a suitable type mold for rapidly and cheaply producing extremely accurate and perfect type.

The object of my invention is to provide a simple, reliable, accurate and convenient device of the kind described which may be operated automatically with great rapidity and produce extremely accurate type without the attendance of skilled labor.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the accompanying drawings wherein like or similar reference characters indicate like or corresponding parts: Figure 1 is a section taken substantially on line 1—1 of Fig. 3. Fig. 2 is a perspective detail of my improved matrix carrier and associated parts for controlling the position of the matrix. Fig. 3 is a section taken substantially on line 3—3 of Fig. 1. Fig. 4 is a section taken substantially on line 4—4 of Fig. 1. Fig. 5 is an enlarged detail of a slightly modified form of movable block adapted for use with my matrix carrier. Fig. 6 is a section taken substantially on line 6—6 of Fig. 5. Fig. 7 is a detail of another modified form of a movable block adapted for use with my matrix carrier. Fig. 8 is a section taken substantially on line 8—8 of Fig. 7. Figs. 9 and 10 are sectional details of slightly modified forms of the type finishing portion of my machine. Fig. 11 is a similar section showing another modified form of the type receiving and finishing portion of my machine. Fig. 12 is an end view of the mechanism shown in Fig. 11. Fig. 13 is a section taken substantially on line 13—13 of Fig. 11. Fig. 14 is a side elevation of a finished type as produced by the operation of my machine.

In the preferred form of my device a base or pedestal is provided of any desired form or construction, at the top of which my mechanism, consisting of a mold, a matrix carrier and a metal pot, is mounted, the several parts being arranged to coöperate for automatically producing type, and all preferably controlled by a common power element as clearly shown and described in my application of Dec. 5, 1907, Serial No. 405,230 aforesaid. The present application, however deals particularly with the matrix carrier and associated parts directly coöperating with the type mold. As shown, the base or pedestal 1—1 of my device is suitably formed in any desired manner to receive the stationary mold parts 2 and 3 with which the horizontally movable mold part 4 is arranged to coöperate. The mold part 4 also serves as an ejector for forcing the type from the mold after each type is cast. The vertically movable part 5 is arranged to operate at one end of the mold parts 2 and 3 to coöperate with the movable part 4 to control the set width of the type. After each type is cast the part 5 is depressed to permit the discharge of the type from the mold. The upper end of the part 5 also serves as a connection between the mold part 2 and the lower type receiving jaw 6 to guide the type from the mold into the space between the jaws 6 and 7 where each type is engaged by suitable mechanism to prevent its retraction with the mold part or ejector 4. In the preferred construction, the outer portions of the members 2 and 3, that is, that part of the face of each member not directly bordering on the mold opening, are cut away or recessed as at 8 and 9, leaving only a narrow strip as at 10 and 11 upon the members 2 and 3 respectively to coöperate with the face of the matrix presented to the mold, thereby reducing the difficulties of securing a fluid tight joint between the matrix and mold.

My improved matrix carrier preferably consists of a carriage or frame 12 having suitable grooves or guides 14 upon its sides adapted to coöperate with corresponding ways 15 rigidly attached to, or formed integrally with, the frame 1, so arranged that the carriage 12 will be accurately guided in its movements, preferably in a horizontal direction and at substantially right angles to the mold members 2 and 3. In the preferred construction shown, a vertical slot 16 is provided centrally of the forward portion of the carriage 12 or the part adjacent the mold and an inverted ⅂-shaped block or matrix support 17 is positioned in the slot 16 and arranged to move vertically therein so that the position of the matrix upon the matrix support may be adjusted vertically as desired. Any suitable means may be provided for controlling the position of the matrix support 17 upon the carriage. As shown, the arm 18 of the matrix support is provided with a threaded opening, and a screw 19 is mounted upon a portion of the carriage over-hanging the slot 16 adapted to engage the threaded opening in the arm for this purpose. Any convenient means may be provided upon the matrix support 17 for rigidly maintaining a matrix in position. In the form shown, each matrix 20 consists of a substantially flat rectangular plate having a character or die on one of its flat sides. The portions of the flat side adjacent the die are formed to accurately coöperate with the strips 10 and 11 and the adjacent portions of the parts 4 and 5 of the mold to form a fluid tight joint between them.

In the preferred form, a movable block 21 of suitable form is mounted upon the matrix support 17 to provide a suitable backing and support for the matrix 20. A recess 22 is formed at the back of the block 21 adapted to coöperate with a suitably formed projection 23 upon the matrix support to limit the vertical movement of the block 21. A plate 24 is rigidly secured to the upper end of the matrix support 17 and extends across the upper end of the block 21 with a down-turned portion 25 at its free end adapted to engage the face of the block to hold it in position. The plate 24 is preferably formed of spring material and arranged to bear upon the block 21 near its front edge, thereby permitting a slight vertical movement of the block which, however, is limited by the engagement between the ends of the recess 22 and projection 23. In the preferred form, the matrix seat is formed jointly upon the parts 17 and 21 and may be of any suitable form adapted to rigidly hold the matrix in position. A portion 26 of the block 21 projects forward at the upper end of the face 27 adapted to engage one edge of a matrix. The arm 28 of the matrix support 17 also projects forward slightly beyond the face of the block 21 and is adapted to engage the opposite edge of the matrix. The several parts are so constructed that the distance between the parts 26 and 28 is sufficiently less than the length of a matrix so that when a matrix is positioned between the parts, the block 21 is forced upward slightly thereby resiliently holding the matrix in position between the block and matrix support. In the preferred construction ribs 30 and 31 are provided at the outer ends of the parts 26 and 28 respectively each arranged to engage the face of the matrix near the edges thereof which are engaged by the matrix seat and rigidly hold the matrix in position.

In Figs. 5 and 6 a slightly modified form of movable block is shown in which the general shape of the back remains substantially the same as hereinbefore described. The matrix seat however is formed wholly upon the block and the recess 33 at the back of the block is preferably formed to snugly engage the projection 23 upon the matrix support. A projection 34 is provided at the lower end of the block to form the lower portion of the matrix seat and a rib 35 or other convenient means is provided near the end of the projection to engage the face of the matrix and hold the lower end of the matrix in position. The projection 37 and rib 38 at the upper end of the block correspond to the parts 26 and 30 hereinbefore described. In this form a longitudinal recess 39 is provided in the central portion of the back of the block, also extending across its upper end to the inner face of the rib 38. A spring 40 is positioned in the recess 39 with one end 41 rigidly secured to the block and its free end extending into suitable position to engage the upper end of the matrix 42 and resiliently force the same downward against the projection 34. In each form however it will be noted that a projection is provided at the bottom side of the matrix seat extending beyond the face of the matrix and arranged to engage the matrix to hold the same in position. Means are also provided to force the matrix edgewise against the projection, thus accurately locating each matrix upon the matrix carrier so that the character upon the matrix, which is always formed a certain fixed distance from one end of the matrix, will be accurately positioned to coöperate with the mold to properly locate the character upon the type formed in the machine.

In the form shown in Figs. 7 and 8, the general form of the block is substantially the same as shown in Figs. 5 and 6 except that in place of the recess 39 and spring 40 a recess 44 is provided extending rearwardly from the rib 45 across the upper end of the block. An opening 46 extends from the bottom of the recess 44 longitudinally of the block with an enlarged portion 47 at its lower end. A rod 48 having a head 49 at its lower end is positioned in the recess with a spring 50 positioned in the enlarged portion 47 adapted to resiliently force the rod downward. The upper end of the rod 48 is provided with a head 51 adapted to engage the upper end of a matrix 52 positioned upon the matrix-holder and resiliently force the same downward upon the lower portion of the seat.

Any suitable means may be provided to control the position of the matrix carrier. As shown, a stud 53 is rigidly secured to the carriage 12 substantially parallel to the ways 14 and a suitable lever 54 is provided with a part 55 adapted to engage the stud. A spring actuated washer 56 is preferably provided upon the stud 53 adapted to provide sufficient resilience between the lever 54 and carriage.

Any suitable means may be provided to engage each type as ejected from the mold and prevent its retraction with the return of the ejector. In the form shown in Fig. 4, a rod 60 is rotatably mounted in the frame 1 below the jaw 6 substantially parallel to the jaw. A cam or finger 61 is rigidly secured near one end of the rod arranged to extend upward through a suitable opening 62 in the jaw to engage a type positioned between the jaws 6 and 7. An arm 63 or other suitable means is rigidly secured to the rod 60 near its opposite end and suitably connected to the actuating mechanism of my device to control the position and movements of the finger 61. The mechanism is so arranged that a type ejected from the mold is engaged when the mold member reaches the limit of its ejecting movement.

In the forms shown in Figs. 9 and 10, a resilient spud or cutter 64 is provided in a suitable opening 65 in either of the members $6'$ or $7'$ as desired arranged in either case to resiliently press the type just ejected from the mold against the opposite jaw and present a sharp edge to prevent its retraction.

In the form shown in Fig. 11 an opening 66 is provided in the member 7^2 and a spring 67 is positioned in the opening and arranged to engage a spud 68 and resiliently force the same into engagement with each type as it is ejected to prevent its retraction. In this form also a plurality of cutters 69 are provided arranged in suitable openings in the member 7^2 each adapted when desired, to be projected below the lower face of the member 7^2 so that as the type are forced along between the jaws 6^2 and 7^2 each type will be engaged by such of the cutters 69 as are in service and a notch or nick will be formed in its edge as at 70 (Fig. 14). A transverse recess 71 is also formed in the member 7^2 near the cutting edge of the cutters 69 to permit the escape of chips or cuttings from the cutters.

Having thus described my improvement it is obvious that various immaterial modifications may be made in my device without departing from the spirit of my invention, hence I do not wish to be understood as limiting myself to the exact form or construction shown.

What I claim as new and desire to secure by Letters Patent is:

1. In a device of the kind described, a matrix carrier comprising a carriage, and a matrix support coöperating with said carriage adapted to engage two edges of a matrix, in combination with means adapted to overlap and engage the face of said matrix at opposite points to rigidly hold said matrix in position upon said support.

2. In a device of the kind described, a matrix carrier comprising a carriage, and a matrix support adjustably mounted upon said carriage, arranged to engage two edges of a matrix, in combination with means adapted to overlap and engage the face of said matrix at opposite points to rigidly hold said matrix in position upon said support.

3. In a device of the kind described, a matrix carrier comprising a carriage, a matrix support coöperating with said carriage adapted to resiliently engage two edges of a matrix, in combination with means adapted to engage the face of said matrix to rigidly hold said matrix in position upon said support.

4. In a device of the kind described, a matrix carrier comprising a carriage, a matrix support coöperating with said carriage comprising a movable block arranged to coöperate with said support to resiliently engage two edges of a matrix, in combination with means adapted to engage the face of said matrix to rigidly hold said matrix in position upon said support.

5. In a device of the kind described, a matrix carrier comprising a carriage, a matrix support coöperating with said carriage adapted to resiliently engage two edges of a matrix, in combination with projecting ribs upon said matrix seat adapted to engage the face of said matrix to rigidly hold said matrix in position upon said support.

6. In a device of the kind described, a matrix carrier comprising a carriage, a matrix support coöperating with said carriage adapted to resiliently engage the opposite edges of a matrix, in combination with means adapted to engage the face of said matrix to rigidly hold said matrix in position upon said support.

7. In a device of the kind described, a matrix carrier comprising a carriage, a matrix support adjustably mounted upon said carriage adapted to resiliently engage two edges of a matrix, in combination with means adapted to engage the face of said matrix to rigidly hold said matrix in position upon said support.

8. In a device of the kind described, a matrix carrier comprising a carriage, a matrix support adjustably mounted upon said car-

riage, comprising a movable block arranged to resiliently coöperate with said support to engage two edges of a matrix, in combination with means adapted to engage the face of said matrix to rigidly hold said matrix in position upon said support.

9. In a device of the kind described, a matrix carrier comprising a carriage, a matrix support adjustably mounted upon said carriage, comprising a movable block arranged to resiliently coöperate with said support to engage two edges of a matrix, in combination with projecting ribs upon said matrix seat adapted to engage the face of said matrix to rigidly hold said matrix in position upon said support.

10. In a device of the kind described, a matrix carrier comprising a carriage, a matrix support adjustably mounted upon said carriage, comprising a movable block arranged to resiliently coöperate with said support to engage the opposite edges of a matrix, in combination with means adapted to engage the face of said matrix to rigidly hold said matrix in position upon said support.

11. In a device of the kind described, a matrix carrier comprising a carriage, a matrix support coöperating with said carriage comprising a movable block arranged to resiliently coöperate with said support to engage the opposite edges of a matrix, in combination with means adapted to engage the face of said matrix to rigidly hold said matrix in position upon said support.

12. In a device of the kind described, a matrix carrier comprising a carriage, a matrix support coöperating with said carriage comprising a movable block arranged to coöperate with said support, to engage the opposite edges of a matrix, in combination with means adapted to overlap and engage the face of said matrix at opposite points to rigidly hold said matrix in position upon said support.

13. In a device of the kind described, a matrix carrier comprising a carriage, a matrix support coöperating with said carriage, adapted to resiliently engage the opposite edges of a matrix, in combination with projecting ribs upon said matrix seat adapted to engage the face of said matrix to rigidly hold said matrix in position upon said support.

14. In a device of the kind described, a matrix carrier comprising a carriage, a matrix support coöperating with said carriage, comprising a movable block arranged to resiliently coöperate with said support to engage a matrix between them, in combination with means adapted to engage the face of said matrix near the edges engaged by said matrix seat to rigidly hold said matrix in position upon said support.

15. In a device of the kind described, a matrix carrier comprising a carriage, a matrix support adjustably mounted upon said carriage, adapted to resiliently engage two edges of a matrix, in combination with projecting ribs upon said matrix seat adapted to engage the face of said matrix along the edges engaged by said matrix seat to rigidly hold said matrix in position upon said support.

16. In a device of the kind described, a matrix support adapted to resiliently engage two edges of a matrix, in combination with projections upon said matrix support adapted to engage the face of said matrix along its edges to hold said matrix in position upon said support.

17. A matrix support comprising a block, and resilient means arranged to coöperate to engage a matrix between them, said engaging means being adapted to project beyond and engage the face of said matrix near the edges to rigidly hold said matrix in position upon said support.

18. A matrix support, adapted to engage the opposite edges of a matrix, said engaging means including projecting ribs adapted to engage the face of said matrix near the edges to rigidly hold said matrix in position upon said support.

19. In a device of the kind described, a matrix carrier comprising a carriage, a matrix, a matrix support adapted to engage the opposite edges of said matrix comprising flanges projecting beyond and over-lapping the face of said matrix, in combination with a mold having the outer portion of its walls recessed whereby said mold coöperates with said matrix carrier to engage only the central portion of a matrix positioned in said carrier.

20. A machine for casting type, comprising a part for ejecting the type from the mold, opposing jaws between which the type are ejected, and a friction device located in said jaws for removing the type from the ejector, irrespective of the size of the type.

21. A machine for casting type, comprising a part for ejecting the type from the mold and a friction device adapted to engage each type as ejected to remove the type from the ejector.

22. A machine for casting type, comprising an ejector, means for removing the type from the ejector, comprising a part arranged to frictionally press against the type and retain it while the ejector is retracted.

23. A machine for casting type comprising a part for ejecting the type from the mold, and a pair of members adapted to engage each type as ejected from the mold between them to hold the type in position, in combination with means located in one of said members adapted to resiliently engage each type as ejected and prevent its retraction with the ejector.

24. In a device of the kind described, a

matrix support adapted to engage two edges of a matrix, in combination with projections upon said matrix support, adapted to project beyond and engage the face of said matrix along its edges to hold said matrix in position upon said support.

25. In a device of the kind described, a matrix support adapted to resiliently engage two edges of a matrix, in combination with projections upon said matrix support adapted to overlap and engage the face of said matrix to hold said matrix in position upon said support.

26. In a device of the kind described, a matrix carrier having a matrix seat and a projection adapted to engage one edge of a matrix positioned on said seat and extend beyond the face of said matrix and means for forcing said matrix edgewise against said projection to accurately position said matrix upon said carrier.

27. In a device of the kind described, a matrix carrier having a matrix seat and a projection near one edge of the matrix seat adapted to engage the edge of a matrix positioned on said seat and extend beyond the face of said matrix and resilient means for forcing said matrix edgewise against said projection to accurately position said matrix upon said carrier.

In testimony whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN S. THOMPSON.

Witnesses:
Burton U. Hills,
Blanche Chalmers.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."